



# ***2006 Renewable Energy Investment Plan***

**Workshop on the *Staff Draft Report*  
November 14, 2005**

## **Renewables Committee**

**Commissioner John L. Geesman, Presiding Member  
Vice Chair Jackalyne Pfannenstiel, Associate Member**



# ***2006 Renewable Energy Investment Plan Staff Draft Report***

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**[www.energy.ca.gov/renewables/investmentplan/documents](http://www.energy.ca.gov/renewables/investmentplan/documents)**



# Schedule for the 2006 Renewable Energy Investment Plan

November 14	Renewables Committee Workshop <ol style="list-style-type: none"><li>1. Overview of <i>Staff Draft Report</i></li><li>2. Public comments</li></ol>
November 21	Written comments due on <i>Staff Draft Report</i>
January 3	Publish the <i>Final Committee Report</i>
January 18	Business meeting to consider adopting <i>2006 Renewable Energy Investment Plan</i>
Early February	Deliver report to Legislature



# ***2006 Renewable Energy Investment Plan***

- Recommends an allocation of Renewable Energy Program funds collected from January 1, 2007, to January 1, 2012.
- Required by Public Utilities Code sections 399 et seq., which codifies
  - Senate Bill 1194 (Sher), Chapter 1050, Statutes of 2000.
  - Assembly Bill 995 (Wright), Chapter 1051, Statutes of 2000.
- The *Staff Draft Report* is based on policy direction from:
  - The Governor's response to the California Energy Commission's *2003 Integrated Energy Policy Report* and the *2004 Integrated Energy Policy Report Update*.
  - The California Energy Commission's *2005 Integrated Energy Policy Report, Committee Draft*.
  - Recent payment histories from each of the program elements of the Renewable Energy Program.
  - Energy Commission staff analysis.



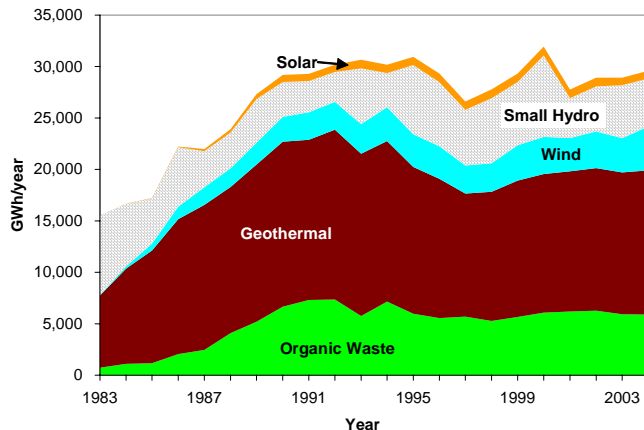
# California Energy Commission

## Status of Renewable Energy in California

Although the amount of electricity from renewable resources has increased, the percentage of renewable energy has dropped from 11.0% in 2002 to 10.6% in 2004.\*

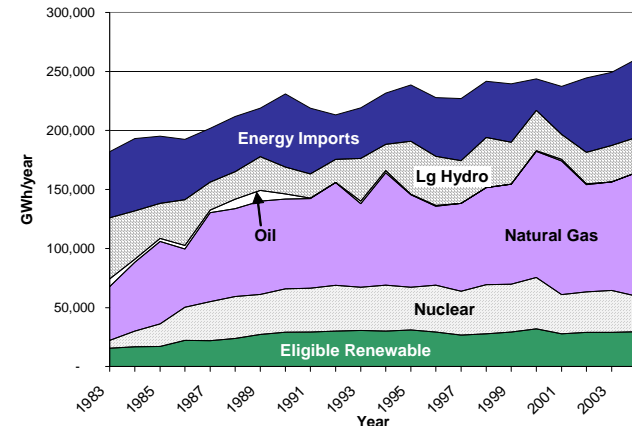
Distributed generation PV capacity is growing quickly, but is still behind Japan and Germany.

**Figure 2. California Renewable Electricity Generation by Resource Type 1983-2004**



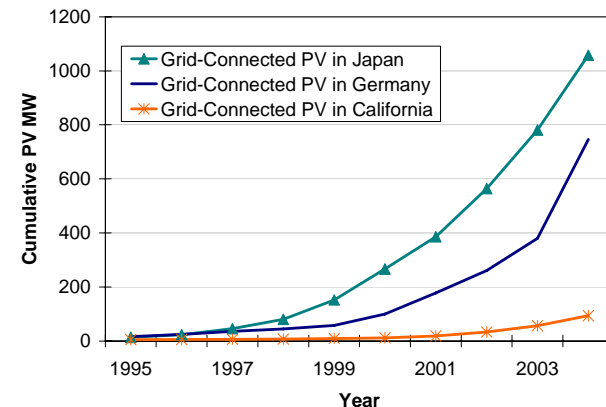
Source: California Energy Commission, 1983-2004 California Electricity Generation - (Spreadsheet, Microsoft Excel), [http://www.energy.ca.gov/electricity/ELECTRICITY\\_GEN\\_1983-2004.XLS](http://www.energy.ca.gov/electricity/ELECTRICITY_GEN_1983-2004.XLS). The amount shown for small hydro is an estimate prepared by Energy Commission staff, with data for recent years from the Energy Commission's net system power reports.

**Figure 1. California Electricity Generation 1983-2004**



Source: California Energy Commission, 1983-2004 California Electricity Generation - (Spreadsheet, Microsoft Excel), [http://www.energy.ca.gov/electricity/ELECTRICITY\\_GEN\\_1983-2004.XLS](http://www.energy.ca.gov/electricity/ELECTRICITY_GEN_1983-2004.XLS).

**Figure 3. Cumulative Grid-Connected Photovoltaic Capacity in Japan, Germany, and California (1995-2004)**



Source: International Energy Agency Photovoltaic Power Systems Programme, Annual Report 2004, <http://www.oia-services.nl/iea-pvps/ar04/index.htm>. Solarbuzz, March 14, 2005, 2004 World PV Market Report Highlights, <http://www.solarbuzz.com/Marketbuzz2005-intro.htm>. California Energy Commission, March 31, 2005, "Amount (MW) of Grid-Connected Solar Photovoltaics (PV) in California, 1981 to Present," [http://www.energy.ca.gov/renewables/emerging\\_renewables/GRID-CONNECTED\\_PV.PDF](http://www.energy.ca.gov/renewables/emerging_renewables/GRID-CONNECTED_PV.PDF).



# California Energy Commission

## Overview of the 2006 Renewable Energy Investment Plan, Staff Draft Report

**Table ES-1. Recommended Renewable Energy Program Funding Allocations January 1, 2007 – January 1, 2012 (percent)**

	SB 90 1998-2001	SB 1038 2002-2007	SB 1038 2002-2007 reallocation of customer credit	Proposed 2007-2012	Change from SB 1038 (% of total)
Renewables Portfolio Standard			51.5%	38%	-13.5%
New Renewables	30%	51.5%			
Emerging Renewables	10%	17.5%	26.5%	48%	+30.5%
Consumer Information and Market Support Program*	1%	1%	2%	4%	+ 3.0%
Customer Credit	14%	10%	0%	0%	-10.0%
Existing Renewables	45%	20%	20%	10%	-10.0%
Total	100%	100%	100%	100%	0.0%

Source: Senate Bill 90 (Sher), Chapter 905, Statutes of 1997, Senate Bill 1038 (Sher), Chapter 515, Statutes of 2002, *2006 Renewable Energy Investment Plan*.

\*Currently named the Consumer Education Program.



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### Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

**Table ES-2. Recommended Renewable Energy Program Funding Allocations January 1, 2007 – January 1, 2012 (\$ million)**

	SB 1038 2002-2007 excluding interest (\$ million)	Amount spent in FY 2004-2005 (\$ million)	Proposed 2007-2012 excluding interest (\$ million)
Renewables Portfolio Standard			\$266
New Renewables	\$347.63	\$10.70	
Emerging Renewables	\$118.12	\$55.90	\$336
Consumer Information and Market Support Program*	\$6.75	\$0.19	\$28
Customer Credit	\$67.50	\$0.00	\$0
Existing Renewables	\$135.00	\$18.30	\$70
Total	\$675.00	\$85.09	\$700

Source: Senate Bill 1038 (Sher), Chapter 515, Statutes of 2002, California Energy Commission, November 2005, *2005 Annual Report to the Legislature, Committee Report, 2006 Renewable Energy Investment Plan*.

\*Currently named the Consumer Education Program.



## California Energy Commission

### Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

- **New Renewable Facilities:** 38 percent for RPS production incentives or supplemental energy payments (SEPs).<sup>\*</sup>
  - RPS contracts signed through October 2005 did not need SEPs.
  - High cost of natural gas reduces need for SEPs.
  - Staff suggests greater flexibility to reallocate funds if market conditions change.
- Competitive auctions to allocate RPS energy production incentives.
  - Auction award would be conditioned upon receiving a Renewables Portfolio Standard contract.
  - Reduces complexity and increases transparency.
  - Builds on success of auctions held between 1998 and 2001.
- Market Price Referent used for reasonableness only, not SEPs.
  - Other approaches for reasonableness may be more efficient.

<sup>\*</sup> Staff suggests renaming the New Renewable Facilities Program to the Renewables Portfolio Standard Incentive Program





## California Energy Commission

# Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

**Table 3. SB 90 Auction Results for New Renewable Resources**

Technology	MW Online	Total MW Bid	MW Cancelled	MW Not Online
Wind	348	986	3	635
Geothermal	59	157	-	98
Landfill Gas	36	77	27	13
Small Hydro	31	33	-	2
Biomass	11	19	8	-
Digester Gas	2	2	-	-
Waste Tire	-	30	-	30
Total MW	488	1,304	38	777

Source: California Energy Commission, Renewable Energy Program Staff, October 18, 2005.



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# Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

**Table 4. IOU RPS Contracts for New or Repowered Renewables by Technology (MW)**

	PG&E	SCE	SDG&E	TOTAL
Wind	167 – 190	121 – 345	358	646 – 893
Wind Repowering	84 – 99	37	0	120 – 135
Geothermal	0	30 – 120	0	30 – 120
Biomass	18	12 – 37	75	106 – 131
Solar Thermal Electric	0	500 - 850	300 - 900	800 – 1750
Small Hydropower	0	0	5	5
TOTAL	269 - 306	700 - 1389	738 - 1338	1707 – 3033

This table includes contracts for new and repowered renewable energy capacity submitted to or approved by the CPUC since 2002 updated through October 28, 2005. Capacity additions do not include four contracts that SCE signed under its 2002 RFO, as at least one of those contracts has been terminated (TrueSolar), and information on the resource type and/or project size of the other three is not publicly available. RPS contracts executed to date are priced at or below the MPR and will not need supplemental energy payments.

Source: Energy Commission RPS staff and Wiser et al (October 2005), *The Electricity Journal*, Vol. 18, Issue 8, pp. 55-67.



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### **Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report***

- **Emerging Renewables:** 48 percent for incentives to support the Governor's Million Solar Roofs Initiative/California Solar Initiative to achieve 3,000 megawatts of photovoltaics in the next 10 years.
  - This allocation of funds would provide about half of the first five years of incentives for the California Solar Initiative.
    - Based on the lower estimate (\$1.1 billion) of the program's cost from the June 2005 joint California Public Utilities Commission and California Energy Commission staff California Solar Initiative report.
  - Flexibility needed to respond to California Solar Initiative and changing market conditions.
    - CPUC decision on California Solar Initiative planned for end of 2005.
  - This allocation includes money to repay the \$60 million borrowed from future collection of Renewable Energy Program funds.
    - Assembly Bill 135 (Reyes), Chapter 867, Statutes of 2004.



# Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

- **Existing Renewables:** 10 percent for production incentives for existing solid-fuel biomass facilities only.
  - Existing wind facilities have been competitive during the past two fiscal years and have not required incentives from the Existing Renewable Facilities Program (ERFP).
  - Payments for existing solar thermal electric facilities for 2004 were about \$1.5 million, \$1.4 million for 2003.
    - Two RPS contracts have been signed for new facilities using solar thermal energy. Neither contract requires SEPs, indicating that this capital-intensive technology can succeed without support from the Renewable Energy Program.
    - Compared to new facilities, existing solar thermal electric facilities built in the 1980s should have lower costs because payments for capital cost debt should be nearly complete.



## California Energy Commission

### Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

- **Existing Renewables (continued):** 10 percent for production incentives for existing solid-fuel biomass facilities only.
  - Payments from ERFP for solid-fuel biomass facilities: about \$17 million for 2004, \$16 million for 2003. Average payments in past 12 months range from 0.33 cents/kWh to 1 cent/kWh.
  - IOU RPS contracts using solid-fuel biomass signed without SEPs.
  - Levelized cost for new 25 MW fluidized bed biomass: 7.1 cents/kWh for new plants online in 2005, 6.9 cents/kWh for 2007, 5.9 cents/kWh for 2010.\* Costs should be lower for older plants with repaid capital debt.
  - Excluding ERFP incentives and the federal production tax credit (PTC), staff estimates that existing solid-fuel biomass facilities receive about 7.37 to 7.87 cents/kWh on average from energy and capacity payments.
    - Staff estimates that summer peak and partial peak capacity payments for existing solid-fuel biomass are equivalent to about 10 cents/kWh.
  - Federal PTC: 0.475 cents/kWh or 0.95 cents/kWh for open-loop biomass, based on specified criteria. Begins 2005, adjusted annually.



## California Energy Commission

### Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

- **Consumer Education:** 4 percent for consumer information, outreach, and marketing efforts to support the Governor's goal of ramping up to 3,000 MW of distributed generation PV, the Western Renewable Energy Generation Information System (WREGIS), and other consumer information and market support activities.
  - To achieve 3,000 MW of distributed generation PV, California will need to install, on average, almost 300 MW per year for the next ten years.
  - Information and market support activities are needed to encourage and assist newcomers enter the solar energy market and provide continued assistance to current market participants.
  - The WREGIS will track RECs created by RPS-eligible energy generated within the WECC, and is expected to be operational in early 2007.
    - The Energy Commission plans to use North American Electricity Reliability Council (NERC) tags in conjunction with the WREGIS to verify delivery of RPS energy into California.
  - Staff suggests new name: Consumer Information and Market Support.



## California Energy Commission

### ***Overview of the 2006 Renewable Energy Investment Plan, Staff Draft Report***

- **Roll over of remaining funds:** Staff recommends rolling over any remaining funds available at the close of 2006 into money available for expenditure between January 1, 2007, and January 1, 2012.
  - New Renewable Facilities Program funds should be rolled into the Renewables Portfolio Standard Incentive Program.
  - Consumer Education Program funds should be rolled into the Consumer Information and Market Support Program.
  - Existing Renewable Facilities Program funds should remain in this program, except for funds originally allocated for existing wind energy (Tier 2). These funds should be rolled into the Emerging Renewables Program.
  - Any remaining Emerging Renewables Program funds will stay in the Emerging Renewables Program.



# Overview of the *2006 Renewable Energy Investment Plan, Staff Draft Report*

- **Continued Flexibility to Adjust to Market Conditions:**
  - Senate Bill 1038 restricts reallocation of funds from the New Renewable Facilities Program element. Staff recommends that this restriction be removed to adjust to changing market conditions.
  - Likewise, staff recommends allowing funds to be added to the Existing Renewable Facilities Program to maintain maximum flexibility to respond to market conditions.
  - For January 1, 2007, to January 1, 2012, staff recommends that program eligibility criteria, distribution methods, and reallocation of funds continue to be developed through guidelines.
    - The guidelines may be periodically revised with public input to allow rapid response to changes in the market, make any needed mid-course corrections, and avoid inefficiency.
  - Reallocation decisions are reported in the annual report to the Legislature, as required by Assembly Bill 2304 (Richman), Chapter 781, Statutes of 2004.





# California Energy Commission

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## California Energy Commission

# ***2006 Renewable Energy Investment Plan***

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November 14, 2005

To call and participate  
in today's meeting,  
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***Written comments due November 21***